

WE CLAIM

1. The method of manufacturing thin-walled permeable membrane tubing comprising the steps of: inserting water permeable material into a blown film extruder; forcing said material through concentric extruding heads in said extruder; blowing air through the center of said extruding head to create a thin-walled tube in the form of a flat band, converting said thin-walled tube to the hydrogen ion form; drying said converted flat band; bathing said flat band in methanol to swell said flat band; and manipulating said swelled band into a tubular shape.  
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2. The method of claim 1 wherein said material is in pelletized form when it is fed into said blown film extruder.  
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3. The method of claim 1 further including the steps of: inserting said tubular material an outer protective mesh; affixing end fittings to said tubular material by, at either end of said tubular material; exposing a portion of said tubular material by pushing back said outer protective mesh; soaking said portion in water to expand said portion; placing an end fitting inside said expanded portion; shrinking said expanded portion over said end fitting; and sealing said portion to said fitting.  
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4. The method of claim 3 wherein the inside diameter of said outer mesh is larger than the outside diameter of the tubing.
5. The method of claim 3 wherein said expanded portion is sealed to said fitting by placing a plastic, adhesive-lined, heat shrinkable tube the outside of the tubing and end fitting assembly; and  
20 heat shrinking the tube over said end fitting assembly.
6. The method of claim 5 further including the steps of: placing an outer protective mesh over said tubing; placing adhesive-lined heat shrink material over said outer mesh; and heat shrinking said heat shrink material over said outer protective mesh.

7. The method of drying or humidifying a substantial volume of breathing gases comprising the steps of: forming thin-walled permeable membrane tubing by blown film extrusion; supporting said tubing by inner and outer protective mesh supports; sealing connectors to each end of said tubing; and connecting the supported tubing in a patient breathing line.

5 8. A dryer or humidifier for patent breathing lines comprising, a thin-walled permeable membrane tubing; an inner mesh mounted within said tubing to support said tubing; an outer mesh surrounding the exterior of said tubing to protect said tubing; and connector means attached to said tubing for connecting said tubing in patient breathing lines.

10 9. A dryer or humidifier for patient breathing lines comprising, a thin-walled permeable membrane tubing, an inner supporting mesh mounted within said tubing; an outer protective mesh surrounding said tubing, at least one end fitting affixed to said tubing, said end fitting being affixed to said tubing by a portion of said tubing shrink fit over said end fitting and sealing means covering said shrink fit portion and said end fitting for sealing said tubing and said end fitting, end fitting inside said expanded portion; shrinking said expanded portion over said end fitting; and sealing said portion to said fitting.

15 10. The dryer or humidifier of claim 9 wherein the inside diameter of said outer mesh is larger than the outside diameter of said tubing.

11. The dryer or humidifier of claim 10 wherein said sealing means is an adhesive-lined heat shrink material.

20 12. A dryer or humidifier for drying or humidifying a substantial volume of patient breathing gases comprising; tubing formed of blown film extrusion thin-walled permeable membrane; an inner supporting mesh mounted within said tubing, an outer protective mesh

surrounding said tubing; and sealed connectors affixed to each end of said tubing for connecting the supported tubing in a patient breathing line.

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